Amendments to the Specification

[0019] FIG. 1 shows a combination of a swirler assembly 20 and a fuel injector nozzle 22. The nozzle has a distal end outlet 24 discharging a fuel spray 26 into an inner duct or passageway 28 of the swirler. The swirler and injector nozzle share a central longitudinal axis 500. The fore end of the swirler is formed by a bearing 30 having a cylindrical interior surface 32 that closely accommodates the injector nozzle allowing relative longitudinal movement of the nozzle and swirler. The exemplary bearing has generally aft and fore surfaces 34, 36, 38 and 40, 42. The aft and fore surfaces extend between a circumferential perimeter rim surface 44 and the cylindrical interior surface 32. In the exemplary embodiment, the aft surface has a radially-extending outboard portion 34 extending inward from the perimeter rim surface 44, a curved portion 36 transitioning therefrom to near longitudinal, and an inboard radial rim portion 38 extending to the cylindrical interior surface 32. The fore surface has a radially-extending outboard portion 40 and a rearwardly/inwardly tapering portion 42 extending to the cylindrical interior surface 32. Spaced rearwardly of the bearing is a prefilmer 50 having generally aft and fore surfaces 52, 54, 56 and 58, 60. The aft surface includes a radially-extending outboard portion 52 extending inward from a perimeter rim surface 62, a longitudinally concavely curved, rearwardly converging, transition portion 54, and an aft rim portion 56 extending radially inward at the end of the curved portion. The fore surface includes a stepped radially-extending outboard portion 52 extending inward from the rim 62 and a longitudinally convexly curved, rearwardly converging, transition portion 60 extending therefrom to the rim 56. The bearing aft surface and prefilmer fore surface generally cooperate to define the inner passageway 28 and an inner flowpath ~~502~~ 202 extending radially inward from an inlet 64 and curving aft to an outlet 66 at the rim surface 56. Air 70 entering the inlet 64 mixes with the fuel 26 in a downstream central portion of the inner passageway 28 to be expelled as a mixture from the outlet 66.

[0020] An outer passageway 72 is formed between the prefilmer aft surface and the fore surface 74, 76 and divergent rim surface 78 of an outer wall 80. The outer wall 80 has an aft surface 82, 84. The outer wall aft and fore surfaces have radial portions 82 and 74 extending inward from a circumferential outer rim 86 and respectively transitioning to longitudinally concave and convex portions 84 and 76 meeting at the aft rim 78. The second passageway defines a flowpath ~~504~~ 204 from an inlet 90 between the prefilmer and outer wall outer rims 62 and 86 to an outlet 92 at the junction of the outer wall aft surface 84 and rim surface 78. In the exemplary embodiment, the inner passageway outlet is recessed slightly behind the second passageway outlet so that the two passageways begin to merge at that point.

[0021] Inlet portions of the first and second passageways carry first and second circumferential arrays of vanes 100 and 102 so as to impart swirl to the air flowing therethrough. General operation may be as described in the '937 patent. Whereas the '937 patent discloses achieving a desired swirl profile by an appropriately distributed twist of vanes having otherwise constant section, the exemplary embodiment achieves this by varying blade section without such twist. In the exemplary embodiment, the bearing is formed with a main piece 101 and a vane pack 103 including the vanes 100. A base portion 104 of the vane pack rides in a rebate 105 in the main piece and has exposed perimeter and aft surfaces respectively forming portions of the perimeter 44 and surface 34.